REMARKS

This paper is being submitted in response to the Final Office Action mailed October 18, 2006. A Notice of Allowance is respectfully requested. If a Notice is not issued, an advisory action is requested since this Response is being submitted within two months of the Office Action mailing date. Claims 1, 2, 16, 35-37 and 48 are pending. Claims 3–15, 17, 18 and 38-47 are withdrawn. Claims 27–34 are cancelled.

Claim 1 is amended for clarification that the deposition steps are during fabrication of the biopolymer array as supported throughout the specification. See, for example, page 3, lines 26-29, and page 10, lines 25-28.

Claims 35–47 are added to the elected group of claims. Support for these claims is found throughout the specification, for example at page 10, lines 25-31; and page 18, lines 6–8. Applicant respectfully requests examination of all the claims in light of the following remarks.

A. Restriction

Applicants do not agree with the Office's characterization of the claims. The Office Action asserts that the elected invention claims 38-47 are directed to distinct processes because they serve different functions. The Office Action characterizes the elected invention as directed to the generation of a composite image of a biopolymer array, while claims 38-47 are devoted to iteratively depositing reagent drops and taking images. In Applicant's view, both the groups of claims are directed to methods for the generation of a composite image of a biopolymer array devoted to iteratively depositing reagent drops and taking images. In our view, the subject matter of claim 37 presents a stepwise embodiment of the general process presented in claim 1. We respectfully request rejoinder of claims 38-47 to the pending claims as no further search burden in required.

B. Information Disclosure Statement

The Office Action notes that several references provided with the Information Disclosure Statement filed May 1, 2006 failed to be scanned or were otherwise missing from the previous IDS submission. A search of the parent file for the references is being performed. Copies of the missing references will be subsequently provided, where available.

C. Rejection under 35 U.S.C. § 102

Claims 1, 2, 16, 35-37 and 48 are rejected under 35 U.S.C. 102(a) as being

anticipated by Budach et al., *Analytical Chemistry*, August 1999, volume 71, pages 3347-3355. Applicant respectfully traverses.

Independent claim 1, as amended, is directed to a method including **obtaining** a set of multiple images *during formation of a target feature location* on a biopolymer array of multiple features, wherein each image of the set is of the target feature location following deposition of a corresponding sub-set of one or more droplets during formation of a biopolymer of that feature; and **generating** an overlay composite from the image set.

The claimed subject matter is to a method for obtaining images and generating an overlay composite from the images of each target feature location where the overlay composite contains information about the deposition pattern of droplets applied during formation, such as in situ synthesis. As is apparent from dependent claim 16, contacting the array with a sample and interrogating the array to gain binding information are separate steps from those presented in independent claim 1.

In contrast to independent claim 1, Budach is taking images of a cDNA array after hybridizing fluor-tagged complementary oligonucleotides and activating the fluorescent tags. Hence, Budach is demonstrating the interrogation of an array, not a process for using images during preparation of an array. While, Budach does use inkjet printing to deliver amine-labeled capture oligonucleotides onto the array surface, Budach does not prepare the oligonucleotides in situ on the array. The oligonucleotides are pre-prepared prior to attachment to the array according the Experimental Section of Budach.

Therefore, Budach does not teach the step of obtaining images during *formation* of a biopolymer array by multi-droplet deposition and does not teach the step of generating an overlay composite from said images. Nor, does Budach teach using the overlay composite for analysis of the data obtained from interrogation of the array such as presented in claim 16. Consequently, independent claim 1 is not anticipated by Budach. Claims 2, 16, 35-37 and 48 depend from claim 1 and consequently are subject to the same reasoning.

D. Rejection under 35 U.S.C. § 103(a)

The previous rejection of claims 1, 2 and 16 under 35 U.S.C. § 103(a) as being unpatentable over Svyatsky (U.S. Patent No. 4,893,952) in view of Wang et al. (U.S. Patent No. 4,508,463) has been withdrawn.

Claims 1, 2 and 16 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Chen, Journal of Biomedical Optics, Vol. 2, 1997, pages 364-374 in view of Allio, U.S. Pat. No. 5,719,620 in view of Gamble, U.S. Pat. No. 5,874.54. The Applicant respectfully traverses this rejection.

To support a rejection under 35 U.S.C. section 103, the collective teachings of the prior art must have suggested to one of ordinary skill in the art that, at the time the invention was made, applicant's claimed invention would have been obvious. The cited references, either alone or in combination, must teach or suggest all the limitations of the claims. The Applicant submits that the Svyatsky and Wang references, either alone or when combined, do not teach or suggest all the limitations of the claims.

The Office Action notes that Chen discloses a method for quantitative analysis of fluorescent signals from fluor-tagged mRNA molecules hybridized to a cDNA array.

Independent claim 1, as amended, is directed to a method including **obtaining** a set of multiple images *during formation of a target feature location* on a biopolymer array of multiple features, wherein each image of the set is of the target feature location following deposition of a corresponding sub-set of one or more droplets during formation of a biopolymer of that feature; and **generating** an overlay composite from the image set. Claims 2 and 16 depend from claim 1.

Chen does not teach all the limitations for claim 1 for at least the simple reason that Chen teaches a method for use of a cDNA array to analyze gene expression –which is in direct contrast to claim 1, which analyzes an array surface during formation of a biopolymer array. The Office Action concedes that Chen does not teach the generation of an overlay composite, which is an element of claim 1, and the use of a pulse jet for applying phosphoramidate droplets. Furthermore, Chen, for example does not teach overlap of the subsets, as in claim 2 of the present Application, nor interrogation of an overlay of the subsets, as in claim 16 of the present Application.

The Office Action relies on Allio and Gamble to provide the missing claim elements not disclosed by Chen. Allio is asserted to disclose composite imaging (i.e. red, green, blue) of microarrays, but does not disclose array fabrication, for example by depositing multiple reagent droplets. Gamble is relied upon for disclosure of pulse-jet delivery of reagents in automated oligonucleotide synthesis. The Applicant respectfully disagrees that the combination of Chen, Allio and Gamble teach all elements of independent claim 1.

Independent claim 1, as amended, is directed to a method including **obtaining** a set of multiple images *during formation of a target feature location* on a biopolymer array of multiple features, wherein each image of the set is of the target feature location following deposition of a corresponding sub-set of one or more droplets during formation of a biopolymer of that feature; and **generating** an overlay composite from the image set.

Chen's failures are not corrected by Allio and Gamble. Allio is limited to imaging of an array hybridized with fluor-labeled target molecules. Allio does not teach imaging of a biopolymer array during *formation by deposition of multiple droplets* and generating an overlay composite of those images. Gamble discloses a method of oligonucleotide synthesis, but also lacks imaging of biopolymer array during *in situ formation* and generating an overlay composite of those images. Consequently, the combination of Chen, Allio and Gamble fail to teach all the limitations of independent claim 1.

In addition, there is no motivation present in Chen, Allio and Gamble to combine. Chen and Allio are directed to use of a cDNA array for detection of fluor-labeled molecules. In contrast, Gamble teaches synthesis of biomolecules. There is no suggestion to apply the imaging of Allio during the making of biomolecules as disclosed by Gamble. In particular, there is no suggestion to image an array during its manufacture. The only imaging of an array and analysis of those images is disclosed during "reading" or interrogation of an already prepared array during its use.

In sum, the combination of Chen, Allio and Gamble lacks elements of at least **obtaining** a set of multiple images *during formation of a target feature location*, wherein each image of the set is of the target feature location following deposition of a corresponding sub-set of one or more droplets during formation of a biopolymer of that feature; and **generating** an overlay composite from the image set.

Since the references, either alone or in combination, do not teach all the claim limitations of the present invention, it would not have been obvious to a person of skill in the art to combine methods of using arrays for detection Chen and Allio in combination with biomolecule synthesis of Gamble to arrive at a method for generating an image composite of a biopolymer array during in situ synthesis.

SUMMARY

In view of the above amendments and remarks, Applicant respectfully requests a Notice of Allowance. If the Examiner believes a telephone conference would advance the prosecution of this application, the Examiner is invited to telephone the undersigned at the below-listed telephone number.

Please charge any additional fees or credit overpayment to Deposit Account No. 13-2725.

Respectfully submitted,
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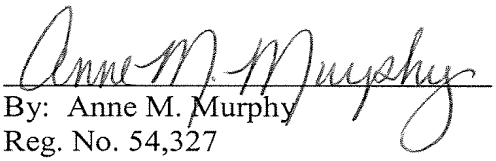
Date: December 18, 2006



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